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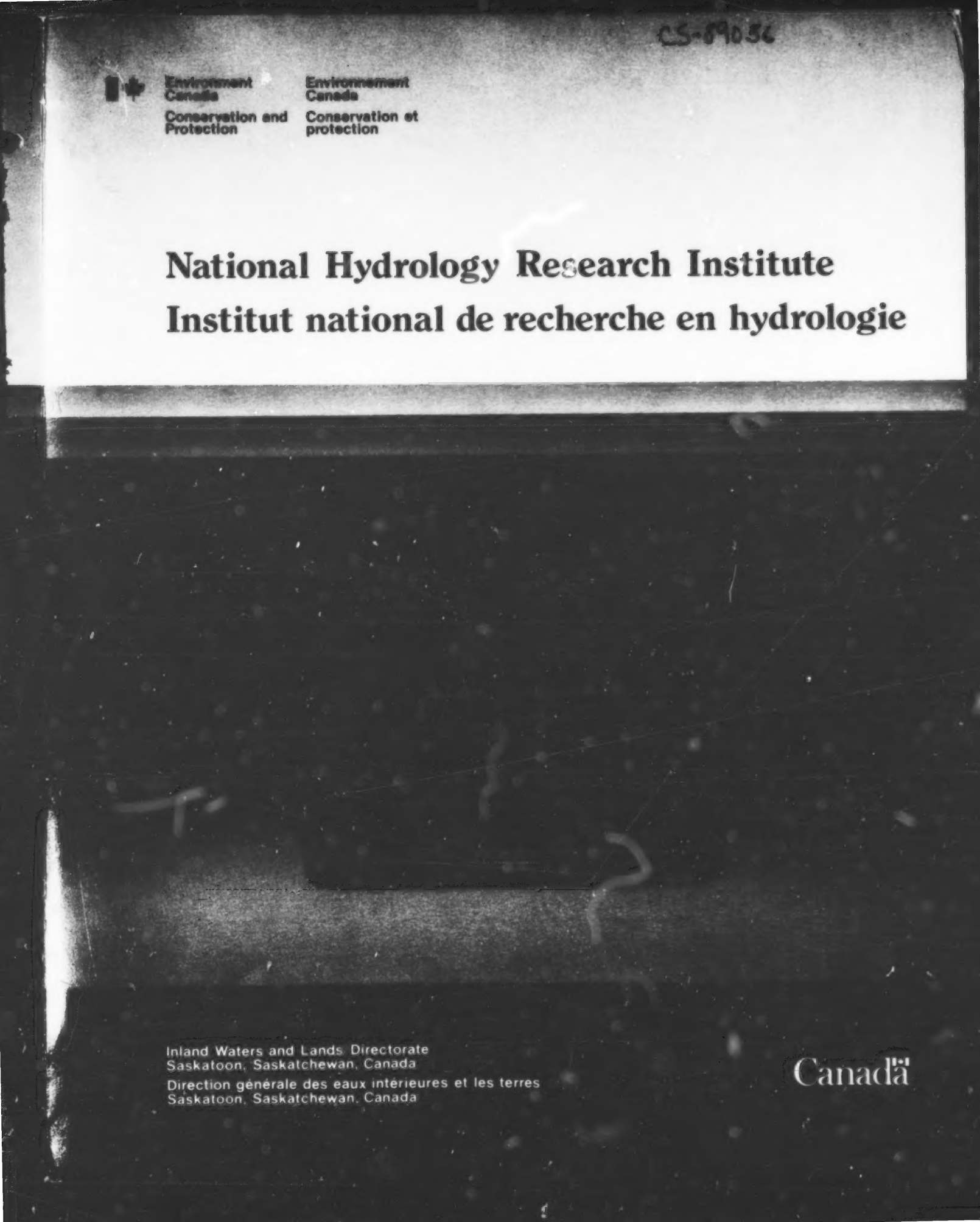

Inland Waters and Lands Directorate
Saskatoon, Saskatchewan, Canada

Direction générale des eaux intérieures et les terres
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CURRENT RESEARCH IN THE EARTH SCIENCES: NHRI REPORT FOR MAY 1988 - APRIL 1989

NHRI Contribution No.89036

May, 1989

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MANAGEMENT PERSPECTIVE

The Communications Programme of the National Hydrology Research Institute disseminates information on work being carried out by NHRI scientists. This facilitates technology transfer and helps build the reputation of the institute nationally and internationally. This report provides information on studies in the earth sciences that will be included in the Canadian Geoscience Council report published by the Geological Survey of Canada.

PERSPECTIVE DE GESTION

Dans le cadre du Programme des communications, l'Institut national de recherches en hydrologie diffuse de l'information concernant les travaux actuellement effectués par les scientifiques de l'INRH. Cela facilite les tranferts de technologie et aide à établir la réputation nationale et internationale de l'institut. Ce rapport fournit des renseignements sur les études en sciences de la terre qui figureront dans le rapport du Conseil géoscientifique canadien publié par la Commission géologique du Canada.

ABSTRACT

This report briefly outlines, in the required format, studies being undertaken by the National Hydrology Research Institute in the areas of geochemistry, geotechnique (permafrost, snow and ice), glaciology, hydrogeology, remote sensing, and sedimentology. The information will be incorporated into the Canadian Geoscience Council report on Current Research in the Earth Sciences, published annually by the Geological Survey of Canada.

RÉSUMÉ

Ce rapport décrit brièvement, suivant le format exigé, les études entreprises par l'Institut national de recherche en hydrologie dans les domaines de la géochimie, de la géotechnique (pergélisol, neige et glace), de la glaciologie, de l'hydrogéologie, de la télédétection et de la sédimentologie. L'information sera incorporée au rapport sur les recherches en cours en sciences de la terre du Conseil géoscientifique canadien publié chaque année par la Commission géologique du Canada

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CURRENT RESEARCH IN THE EARTH SCIENCES

DISCIPLINE (see coding instructions): Geochemistry

Names(s) of Principal and Associate

Researcher(s): T.A. Jackson

K. Supeene

Institution/Department: National Hydrology Research Institute, Saskatoon

Title of Project: Effects of Toxic Pollutants on Microbial Communities

Years commenced/completion: -

Thesis level(s)/graduate student names(s): not applicable

Major publication(s) directly related to project,

within survey interval:

Title: Jackson, T.A., 1988. Accumulation of mercury by plankton and benthic invertebrates in riverine lakes of northern Manitoba.

Source: Canadian Journal of Fisheries and Aquatic Sciences, 45(10), October, 1744-1757

Title: Jackson, T.A., 1988. Effects of clay minerals, hydrated oxides, and humic matter on microbial methylation and ...

Source: Preprints, 3rd Chemical Congress of North America, 28(1), 5-10 June 1988, Toronto, Ontario, 589-594

Comments: (Abstract/aims/progress, etc.): The objectives are to complete the experimental microbiology project using sediments from Flin Flon area and northern Manitoba; to perform a new study of inhibitory and stimulatory effects of heavy metals on microbial activity in sediments; and collect samples from lake(s) near Flin Flon for a new series of experiments.

DISCIPLINE (see coding instructions): Geotechnique, permafrost

Names(s) of Principal and Associate

Researcher(s): Y.T.J. Kwong

J. Ribo

P.M. Huang (Soil Science, Univ. of Saskatchewan)

Institution/Department: National Hydrology Research Institute, Saskatoon

Title of Project: Freeze-Thaw, Soils and Ground Water

Years commenced/completion: -

Thesis level(s)/graduate student names(s): not applicable

Major publication(s) directly related to project,

within survey interval:

Title:

Source:

Title:

Source:

Comments:(Abstract/aims/progress, etc.): The objective is to investigate the effects of multiple freeze-thaw cycles on the chemical properties of soils and the implications for ground-water quality.

DISCIPLINE (see coding instructions): Geotechnique, permafrost

Names(s) of Principal and Associate

Researcher(s): H.D. Craig, Y.T.J. Kwong, L.M. Johnston, M. Griffin
H.A.M. Chew and T.D. Prowse (NHRI)
T. Edwards (University of Waterloo)
A. Judge (Geological Survey of Canada)

Institution/Department: National Hydrology Research Institute, Saskatoon

Title of Project: Ground Water in the Permafrost Environment

Years commenced/completion: -

Thesis level(s)/graduate student names(s): not applicable

Major publication(s) directly related to project,

within survey interval:

Title:

Source:

Title:

Source:

Comments: (Abstract/aims/progress, etc.): The objectives are to investigate the interactions of permafrost and ground water; the movement of water, heat and/or chemical constituents; the relationship between ground-water dynamics, surface-water hydrology, and permafrost; and the effects of seasonal and long-term climatic change on the thermal regime.

DISCIPLINE (see coding instructions): Geotechnique, snow and ice

Names(s) of Principal and Associate

Researcher(s): W. Nicholaichuk and K. Best (NHRI, Saskatoon)
D.M. Gray (Div. Hydrology, Univ. of Saskatchewan)
M. McConkey (Agriculture Canada, Swift Current)
D. Gicaman (WP&M, Environment Canada)

Institution/Department: National Hydrology Research Institute, Saskatoon

Title of Project: Snow Management and Snowmelt Infiltration

Years commenced/completion: -

Thesis level(s)/graduate student names(s): not applicable

Major publication(s) directly related to project,

within survey interval:

Title: Nicholaichuk, W., Gray, D.M. and McConkey, B., 1988. Annual progress report: Snow management and meltwater enhancement.

Source: NHRI Contribution No.89015, National Hydrology Research Institute, Environment Canada, Saskatoon, March, 32 pp.

Title: Landine, P.G., Granger, R.J. and Gray, D.M., 1988. Evaluation of snowmelt models for application in permafrost ...

Source: NHRI Contract Report No.88001, National Hydrology Research Institute, Environment Canada, Saskatoon, 31 March, 54 pp.

Comments: (Abstract/aims/progress, etc.): The objective is to determine appropriate tillage methods to enhance snowmelt infiltration; meltwater infiltration into cracked soils; effect of tillage practices on surface run-off and ground-water recharge.

DISCIPLINE (see coding instructions): Geotechnique, snow and ice

Names(s) of Principal and Associate

Researcher(s): P. Marsh and T.D. Prowse

M.K. Woo, McMaster University

P. Barry, Atomic Energy of Canada

B. McGurk, U.S. Dept. of Agric. Central Sierra Snow Lab

Institution/Department: National Hydrology Research Institute, Saskatoon

Title of Project: Snowmelt Runoff in High Latitude Permafrost Basins

Years commenced/completion: -

Thesis level(s)/graduate student names(s): not applicable

Major publication(s) directly related to project,

within survey interval:

Title: Marsh, P., 1988. Soil infiltration and snow-melt run-off in the Mackenzie Delta, N.W.T.

Source: Proceedings, 5th International Conference on Permafrost, 2-5 August 1988, Trondheim, Norway, Tapir, Vol.1, 618-621

Title: Marsh, P., 1988. Flow fingers and ice columns in a cold snow cover.

Source: Proceedings, 56th Annual Western Snow Conference, 18-20 April 1988, Kalispell, Montana, 105-112

Comments:(Abstract/aims/progress, etc.): The objectives are to determine the rates of, and processes controlling: melt metamorphism; vertical flux of water; exchange of water between the snowpack, active layer, and permafrost; removal of the snow; lateral movement of meltwater; to model large-scale snow processes; study the release of pollutants from snow.

DISCIPLINE (see coding instructions): Geotechnique, snow and ice

Names(s) of Principal and Associate

Researcher(s): T.D. Prowse

P. Marsh

Institution/Department: National Hydrology Research Institute, Saskatoon

Title of Project: Hydrology of Northern Wetlands

Years commenced/completion: -

Thesis level(s)/graduate student names(s): not applicable

Major publication(s) directly related to project,

within survey interval:

Title:

Source:

Title:

Source:

Comments:(Abstract/aims/progress, etc.): The objectives are to establish physical processes controlling snowmelt/run-off from permafrost wetlands (muskeg); develop suitable hydrological models for this environment; and quantify major changes occurring in this hydrological regime as a result of climate change.

DISCIPLINE (see coding instructions): Geotechnique, snow and ice

Names(s) of Principal and Associate

Researcher(s): T.D. Prowse

D. Andres (Alberta Research Council, Edmonton)

Institution/Department: National Hydrology Research Institute, Saskatoon

Title of Project: Economic Significance of River Ice Jams

Years commenced/completion: -

Thesis level(s)/graduate student names(s): not applicable

Major publication(s) directly related to project,

within survey interval:

Title:

Source:

Title:

Source:

Comments:(Abstract/aims/progress, etc.): The objective is to determine the economic significance to the Canadian economy of damage resulting from river ice jams.

DISCIPLINE (see coding instructions): Geotechnique, snow and ice

Names(s) of Principal and Associate

Researcher(s): M.N. Demuth

T.D. Prowse

Neil Lyons (P&Y Region, Environment Canada)

Institution/Department: National Hydrology Research Institute, Saskatoon

Title of Project: Dynamics of Break-up Advance

Years commenced/completion: -

Thesis level(s)/graduate student names(s): not applicable

Major publication(s) directly related to project,

within survey interval:

Title: Prowse, T.D., 1988. Field determination of ice jam porosity. Proceedings, 9th International Symposium on Ice, IAHR, 23-27

Source: August 1988, Sapporo, Japan, Vol.2, 316-325: Vol.3, 275-276; Errata, Vol.3, 318

Title: Alford, M.E. and Carmack, E.C., 1988. Observations on ice cover and streamflow in the Yukon River near Whitehorse ..

Source: NHRI Paper No.40, IWD Scientific Series No.162, Inland Waters Directorate, Environment Canada, Saskatoon, 36 pp.

Comments: (Abstract/aims/progress, etc.): The objectives are to develop a physically-based model describing the interaction of river surges and intact ice covers and to formulate a methodology for field investigations of the kinematic and dynamic processes in river surge/intact ice interaction.

CURRENT RESEARCH IN THE EARTH SCIENCES

DISCIPLINE (see coding instructions): Geotechnique, snow and ice

Names(s) of Principal and Associate

Researcher(s): T.D. Prowse

S. Beltaos (NWRI, Burlington)

B.C. Burrell (New Brunswick Department of Municipal Affairs and Environment)

Institution/Department: National Hydrology Research Institute, Saskatoon

Title of Project: Nashwaak River Break-up

Years commenced/completion: -

Thesis level(s)/graduate student names(s): not applicable

Major publication(s) directly related to project, within survey interval:

Title:

Source:

Title:

Source:

Comments: (Abstract/aims/progress, etc.): The objectives are to establish the meteorological, hydraulic and hydrometric conditions that control break-up and ice jamming on the Nashwaak River, New Brunswick.

DISCIPLINE (see coding instructions): Geotechnique, snow and ice

Names(s) of Principal and Associate

Researcher(s): T.D. Prowse

M.N. Demuth

H.A.M. Chew

Institution/Department: National Hydrology Research Institute, Saskatoon

Title of Project: Mechanical Strength of 0°C River Ice

Years commenced/completion: -

Thesis level(s)/graduate student names(s): not applicable

Major publication(s) directly related to project,

within survey interval:

Title: Prowse, T.D., Demuth, M.N. and Onclin, C.R., 1988. Strength and energy balance of decaying river ice.

Source: Proceedings, 7th Northern Research Basins Symposium, 25 May - 1 June 1988, Ilulissat, Greenland, 293-301

Title: Prowse, T.D., Demuth, M.N. and Onclin, C.R., 1988. Using the borehole jack to determine changes in river ice strength.

Source: Proceedings, 5th Workshop on Hydraulics of River Ice/Ice Jams, 21-24 June 1988, Winnipeg, Manitoba, 283-302

Comments: (Abstract/aims/progress, etc.): The objectives are to develop a physically-based model that characterizes the decrease in strength parameters associated with the thermal decay of ice; to determine the threshold "strength" values associated with the break-up of ice covers; and to develop methods to determine such threshold values for forecasting break-up.

DISCIPLINE (see coding instructions): Geotechnique, snow and ice

Names(s) of Principal and Associate

Researcher(s): H.A.M. Chew

T.D. Prowse

Institution/Department: National Hydrology Research Institute, Saskatoon

Title of Project: Radiation-Ice Modelling

Years commenced/completion: -

Thesis level(s)/graduate student names(s): not applicable

Major publication(s) directly related to project, within survey interval:

Title:

Source:

Title:

Source:

Comments: (Abstract/aims/progress, etc.): The objective is to model the absorption of short-wave radiation by ice and how such absorption leads to internal melting and an increase in ice porosity; and to develop a methodology for predicting changes in porosity, and ultimately ice strength, based on standard meteorological information.

DISCIPLINE (see coding instructions): Geotechnique, snow and ice

Names(s) of Principal and Associate

Researcher(s): P. Marsh

L. Lesack

R. Hecky (Freshwater Institute, Winnipeg)

C. Pharo and R. Leith (P&Y Region, Environment Canada)

Institution/Department: National Hydrology Research Institute, Saskatoon

Title of Project: Mackenzie Delta Hydrology

Years commenced/completion: -

Thesis level(s)/graduate student names(s): not applicable

Major publication(s) directly related to project,

within survey interval:

Title: Marsh, P. and Hey, M., 1989. The flooding hydrology of Mackenzie Delta Lakes near Inuvik, N.W.T., Canada.

Source: Arctic, 42(1), March, 41-49

Title: Bigras, S.C., 1988. Hydrochemical aspects of lakes and channels in the Mackenzie Delta, N.W.T.

Source: NHRI Contribution No.88019, National Hydrology Research Institute, Environment Canada, Saskatoon, September, 40 pp.

Comments: (Abstract/aims/progress, etc.): The objectives are to: determine the importance of various water-balance components of delta lakes and the spatial variation in hydrological regime; model lake levels under natural and altered regimes; study the effect of sea-level rise and long-term changes on delta lake hydrology using proxy data.

CURRENT RESEARCH IN THE EARTH SCIENCES

DISCIPLINE (see coding instructions): Geotechnique, snow and ice

Names(s) of Principal and Associate

Researcher(s): L. Lesack (NSERC Visiting Fellow)

P. Marsh

R. Hecky (Freshwater Institute, Winnipeg)

Institution/Department: National Hydrology Research Institute, Saskatoon

Title of Project: Mackenzie Delta Lakes

Years commenced/completion: -

Thesis level(s)/graduate student names(s): not applicable

Major publication(s) directly related to project,

within survey interval:

Title: Marsh, P. and Hey, M., 1988. Mackenzie River water levels and the flooding of Delta lakes.

Source: NHRI Contribution No.88013, National Hydrology Research Institute, Environment Canada, Saskatoon, February, 135 pp.

Title:

Source:

Comments:(Abstract/aims/progress, etc.): The objectives are to analyze existing NHRI and FWI data basis concerning lake hydrology and limnology; to determine the chemical and nutrient balances for typical delta lakes; and to conduct limited field work as required to fill in data gaps as determined from above analysis.

DISCIPLINE (see coding instructions): Glaciology

Names(s) of Principal and Associate

Researcher(s): G. Holdsworth

M.N. Demuth, S. Fogarasi and B. McCarthy

Institution/Department: National Hydrology Research Institute, Saskatoon

Title of Project: Proxy Climate Data from Ice Cores

Years commenced/completion: -

Thesis level(s)/graduate student names(s): not applicable

Major publication(s) directly related to project,

within survey interval:

Title: Fogarasi, S. and Holdsworth, G., 1988. An investigation of large-scale upper-air flow as a means of explaining the teleconnections between long-term glacier mass balance variations on Mount Logan and long-range spatially averaged precipitation variations in the Prairie/Steppe regions of North America and Eurasia (U.S.S.R.).

Source: NHRI Contribution No.88012, National Hydrology Research Institute, Environment Canada, Saskatoon, March, 31 pp.

Comments:(Abstract/aims/progress, etc.): The objective is to use environmental information extracted from ice cores to determine the nature of paleo-atmospheric processes on a scale of seasons to centuries with emphasis on climatic change, and to place the results in a hydrological context.

DISCIPLINE (see coding instructions): Glaciology

Names(s) of Principal and Associate

Researcher(s): M.N. Demuth

G. Holdsworth

Institution/Department: National Hydrology Research Institute, Saskatoon

Title of Project: Eclipse - CRR Drill Evaluation

Years commenced/completion: -

Thesis level(s)/graduate student names(s): not applicable

Major publication(s) directly related to project,

within survey interval:

Title: Demuth, M.N., Holdsworth, G. and Brancker, R., 1988. Shallow ice borehole logger and deployment system.

Source: NHRI Contribution No.88018, National Hydrology Research Institute, Environment Canada, Saskatoon, 20 pp.

Title:

Source:

Comments: (Abstract/aims/progress, etc.): The objective is to fully field test the CRR ice-core drill, under the logistic constraints imposed by the Icefield Ranges of Kluane National Park, Y.T., and to evaluate its capability to core ice with greater accuracy and quality.

DISCIPLINE (see coding instructions): Glaciology

Names(s) of Principal and Associate Researcher(s): G. Holdsworth with M. Demuth, S. Fogarasi, B. McCarthy and A. Dalton (NHRI); H.R. Krouse and M. Nosal (Univ. of Calgary); P. Mayewski (Univ.of New Hampshire); D. Raynaud (CNRS Grenoble, France); T. Diamond (Canadian Wildlife Ser)

Institution/Department: National Hydrology Research Institute, Saskatoon

Title of Project: Mount Logan Ice Cores

Years commenced/completion: -

Thesis level(s)/graduate student names(s): not applicable

Major publication(s) directly related to project, within survey interval:

Title: Pourchet, M., Pinglot, J.F., Reynaud, L. and Holdsworth, G., 1988. Identification of Chernobyl fall-out as a new reference level in Northern Hemisphere glaciers.

Source: Journal of Glaciology, 34(117), 183-187

Title: Holdsworth, G., 1988. Mt. Logan glaciology, 1986.

Source: The Canadian Alpine Journal, Vol.71, 56-57

Comments:(Abstract/aims/progress, etc.): The objective is to analyse ice-core data to determine the nature of paleo-atmospheric processes on a scale of centuries with emphasis on climatic change and atmospheric chemistry and place the results in the context of hydrology and atmospheric chemistry and to continue analysing data from the 1980 core.

DISCIPLINE (see coding instructions): Glaciology

Names(s) of Principal and Associate

Researcher(s): M.M. Brugman and G. Holdsworth (NHRI, Saskatoon)

G. Luckman (GSC, EMR, Ottawa)

D.S. Munro (University of Toronto)

G. Osborn (University of Calgary)

Institution/Department: National Hydrology Research Institute, Saskatoon

Title of Project: Peyto Glacier, Alberta

Years commenced/completion: -

Thesis level(s)/graduate student names(s): not applicable

Major publication(s) directly related to project,

within survey interval:

Title: Letréguilly, A., 1988. Relation between the mass balance of western Canadian mountain glaciers and meteorological data.

Source: Journal of Glaciology, 34(116), 11-18

Title: Bradley, C., 1988. Variation in fluvio-glacial water quality at Peyto Glacier, Canada.

Source: B.A. thesis, Girton College, Cambridge, U.K., February, 72 pp.

Comments: (Abstract/aims/progress, etc.): The objective is to determine the annual mass balance of Peyto Glacier as a measure of the changing state of mountain water resources and as a contribution to the World Glacier Monitoring Service. The field site is used for research into glacier hydrology and hydrometeorology.

DISCIPLINE (see coding instructions): Glaciology

Names(s) of Principal and Associate

Researcher(s): M.M. Brugman

Institution/Department: National Hydrology Research Institute, Saskatoon

Title of Project: Mountain Hydrology and Glacial Meltwater

Years commenced/completion: -

Thesis level(s)/graduate student names(s): not applicable

Major publication(s) directly related to project,

within survey interval:

Title:

Source:

Title:

Source:

Comments:(Abstract/aims/progress, etc.): The objective will be to review all elements of glacial hydrology of most direct relevance to Canada and the mandate of NHRI and propose a comprehensive, long-term research programme to address the problems identified.

DISCIPLINE (see coding instructions): Glaciology

Names(s) of Principal and Associate

Researcher(s): M.M. Brugman

M.N. Demuth

G. Schmok and G.K.C. Clarke (Univ. British Columbia)

B.C. Hydro and B.C. Provincial Parks

Institution/Department: National Hydrology Research Institute, Saskatoon

Title of Project: Coastal Mountain Glaciers

Years commenced/completion: -

Thesis level(s)/graduate student names(s): not applicable

Major publication(s) directly related to project,

within survey interval:

Title: Mokievsky-Zubok, O., 1988. Glacier mass balance for 1987 on Sentinel, Helm and Place Glaciers, British Columbia.

Source: NHRI Contribution No.88009, National Hydrology Research Institute, Environment Canada, Saskatoon, 17 pp.

Title: Schmok, J., 1988. 1988 mass-balance determination of Sentinel, Place and Helm Glaciers, British Columbia.

Source: NHRI Contract Report No.88002, National Hydrology Research Institute, Environment Canada, Saskatoon, 22 pp.

Comments:(Abstract/aims/progress, etc.): The objective is to conduct glacier mass-balance surveys in the southern regions of the Coast Mountains in order to expand the data base available such that models linking climatic variability with glacier response may be refined and the processes, intrinsic to that link, better understood.

DISCIPLINE (see coding instructions): Hydrogeology

Names(s) of Principal and Associate

Researcher(s): G. Grove

D. McNaughton

C. Pupp (SOE Branch, CWS, Environment Canada)

J. Sanquet & G. Mercer (Cdn Parks Service, Fort Smith, N.W.T.)

Institution/Department: National Hydrology Research Institute, Saskatoon

Title of Project: Ground-Water Technology Transfer

Years commenced/completion: -

Thesis level(s)/graduate student names(s): not applicable

Major publication(s) directly related to project,

within survey interval:

Title:

Source:

Title:

Source:

Comments:(Abstract/aims/progress, etc.): The objectives are to undertake field and/or office investigations with emphasis on specific problems related to the transfer of ground-water technology developed by NHRI. Also to provide advice and assess the technical soundness of the ground-water component of external investigations.

DISCIPLINE (see coding instructions): Hydrogeology

Names(s) of Principal and Associate

Researcher(s): A. Vandenberg

A. Wankiewicz

Institution/Department: National Hydrology Research Institute, Saskatoon

Title of Project: Contaminant Transport Modelling

Years commenced/completion: -

Thesis level(s)/graduate student names(s): not applicable

Major publication(s) directly related to project,

within survey interval:

Title: Vandenberg, A., 1987. A hybrid numerical-analytical method for the solution of partial differential equations in ground..

Source: NHRI Paper No.36, IWD Technical Bulletin No.151, Inland Waters Directorate, Environment Canada, Saskatoon, 16 pp.

Title: Vandenberg, A., 1987. A foreward finite difference procedure with exponentially increasing time steps.

Source: NHRI Paper No.37, IWD Technical Bulletin No.152, Inland Waters Directorate, Environment Canada, Saskatoon, 14 pp.

Comments:(Abstract/aims/progress, etc.): The objective is to improve knowledge about the transport and fate of contaminants in ground water. To adapt predictive models to reflect the improved knowledge.

DISCIPLINE (see coding instructions): Hydrogeology

Names(s) of Principal and Associate

Researcher(s): H.D. Craig and M. Griffin (NHRI, Saskatoon)

R. Lawford (HRD/CCC/AES, Saskatoon), R. Coley (Ducks Unlimited)

B. Clark and K. Brace (CWS, Environment Canada, Saskatoon)

M.-K. Woo and B. Rowsell (Geography, McMaster University)

Institution/Department: National Hydrology Research Institute, Saskatoon

Title of Project: Wetland Hydrology/Climate Change

Years commenced/completion: -

Thesis level(s)/graduate student names(s): not applicable

Major publication(s) directly related to project,

within survey interval:

Title:

Source:

Title:

Source:

Comments: (Abstract/aims/progress, etc.): The objectives are to determine the ground-water component of the hydrological cycle at Slough #50, St. Denis National Wildlife site, and to assess the hydrogeological conditions at this site with respect to a study of fractured tills.

DISCIPLINE (see coding instructions): Hydrogeology

Names(s) of Principal and Associate

Researcher(s): L.M. Johnston

J. Ribo, A. Vandenberg and P.D. Robarts (NHRI, Saskatoon)

G. Ross (Industrial Programs Branch, EP, Environment Canada)

Institution/Department: National Hydrology Research Institute, Saskatoon

Title of Project: Facility for Indoor Aquifer Testing (FIAT)

Years commenced/completion: -

Thesis level(s)/graduate student names(s): not applicable

Major publication(s) directly related to project,

within survey interval:

Title: Vandenberg, A., 1988. A digital simulation of moisture movement through a layered column of sand and AFBC solid waste:

Source: NHRI Contribution No.88015, National Hydrology Research Institute, Environment Canada, Saskatoon, April, 43 pp.

Title:

Source:

Comments: (Abstract/aims/progress, etc.): The objectives are to (1) investigate the behaviour of AFBC wastes under simulated disposal conditions, particularly contaminant migration, (2) assess the effect of piezometer installation on groundwater chemistry and (3) assess using FIAT to study a) pesticide migration; b) microbial activity in ground water.

DISCIPLINE (see coding instructions): Hydrogeology

Names(s) of Principal and Associate

Researcher(s): D. Craig

L.M. Johnston

R. Semkin and D. Jeffries (NWRI, Burlington)

Institution/Department: National Hydrology Research Institute, Saskatoon

Title of Project: Acid Neutralisation in Ground-Water Flow Systems

Years commenced/completion: -

Thesis level(s)/graduate student names(s): not applicable

Major publication(s) directly related to project,

within survey interval:

Title:

Source:

Title:

Source:

Comments:(Abstract/aims/progress, etc.): The objective is to compile and disseminate (to the scientific community, management and the general public) information acquired during the Turkey Lakes Watershed ground-water study.

DISCIPLINE (see coding instructions): Hydrogeology

Names(s) of Principal and Associate

Researcher(s): Y.T.J. Kwong

K. Ferguson (P&Y Region, EPS, Environment Canada)

K. Nordstrom (U.S.G.S., Menlo Park, California)

Institution/Department: National Hydrology Research Institute, Saskatoon

Title of Project: Acid Mine Drainage

Years commenced/completion: -

Thesis level(s)/graduate student names(s): not applicable

Major publication(s) directly related to project,

within survey interval:

Title:

Source:

Title:

Source:

Comments: (Abstract/aims/progress, etc.): The objective is to study water-rock interactions in acid mine drainage and determine the fate and transport of pollutants produced by mining activity in the natural environment.

DISCIPLINE (see coding instructions): Hydrogeology

Names(s) of Principal and Associate

Researcher(s): J.M. Ribo

D. McNaughton

P.M. Huang (Soil Science, Univ. of Saskatchewan)

Institution/Department: National Hydrology Research Institute, Saskatoon

Title of Project: Organic Contamination in Ground Water

Years commenced/completion: -

Thesis level(s)/graduate student names(s): not applicable

Major publication(s) directly related to project,

within survey interval:

Title:

Source:

Title:

Source:

Comments: (Abstract/aims/progress, etc.): The objective is to understand the behaviour of organic contaminants in ground-water systems, including the toxicity of potential organic contaminants, the influence of soil and water properties on their physico-chemical properties, and the toxic effects to non-target organisms.

DISCIPLINE (see coding instructions): Hydrogeology

Names(s) of Principal and Associate Researcher(s): G. Grove (NHRI), P. Blackall (EP, Edmonton), R. Scroggins (EP, Ottawa), J. Snidal, A. Kerr, P. Sims (Alta Environ, Edmonton), S. Bachu (Alta. Res. Council, Edm.), T.R. Creasey (Alta. En. Con. B.Edm), G. Schindel (Can. Pet Assoc, Edm.)

Institution/Department: National Hydrology Research Institute, Saskatoon

Title of Project: Deep Well Disposal

Years commenced/completion: -

Thesis level(s)/graduate student names(s): not applicable

Major publication(s) directly related to project, within survey interval:

Title: INTERA Technologies Limited, 1987. Feasibility study for a field sampling program to monitor impacts resulting from in situ heavy oil subsurface disposal practices.

Source: NHRI Contribution No.88001, National Hydrology Research Institute, Environment Canada, Saskatoon, July, 81 pp.

Source:

Comments: (Abstract/aims/progress, etc.): The objective is to understand the interactions occurring between injected waste fluids and the host aquifer and consequently their influence on the migration of contaminants. Also, to estimate the potential for transboundary flov of contaminants folloving injection into the deep subsurface.

DISCIPLINE (see coding instructions): Hydrogeology

Names(s) of Principal and Associate Researcher(s): D. McNaughton

G. Grove

J.M. Ribo

Institution/Department: National Hydrology Research Institute, Saskatoon

Title of Project: Ground-Water Pesticides Studies in Western Canada

Years commenced/completion: -

Thesis level(s)/graduate student names(s): not applicable

Major publication(s) directly related to project, within survey interval:

Title: Maathuis, H. et al., 1988. Study of herbicides in shallow groundwater beneath three irrigated sites in Outlook ...

Source: SRC Publication No.R-844-13-E-88, Saskatchewan Research Council, Saskatoon, Saskatchewan, June, 94 pp.

Title: Pupp, C. and Grove, G., 1988. Ground water in Canada: use, quality and management.

Source: Proceedings, 6th IWRA World Congress on Water Resources, 29 May - 3 June 1988, Ottawa, Ontario, Vol.II, 409-419

Comments: (Abstract/aims/progress, etc.): The objective is to determine the extent of pesticide contamination of ground water in Western Canada and estimate the potential for future contamination by relating pesticide usage and chemical properties to distribution and properties of ground water systems.

DISCIPLINE (see coding instructions): Remote Sensing

Names(s) of Principal and Associate

Researcher(s): A. Wankiewicz

R.I. Perla

G. Kite (HRD/CCC/AES, Saskatoon)

R. Leith (P&Y Region, Environment Canada)

Institution/Department: National Hydrology Research Institute, Saskatoon

Title of Project: Microwave Remote Sensing of Basin Storage

Years commenced/completion: -

Thesis level(s)/graduate student names(s): not applicable

Major publication(s) directly related to project,

within survey interval:

Title: Wankiewicz, A., 1988. Snowmelt observation by microwave satellite.

Source: EOS, Transactions, American Geophysical Union, 69(44), abstract, 1214

Title:

Source:

Comments:(Abstract/aims/progress, etc.): Objective is to develop procedures for continuous monitoring of the snow cover, snowpack water equivalent and snowmelt events, using microwave satellite imagery.

DISCIPLINE (see coding instructions): Remote Sensing

Names(s) of Principal and Associate Researcher(s): R. Perla
A. Wankiewicz
G. Kite (HRD/CCC/AES, Saskatoon)

Institution/Department: National Hydrology Research Institute, Saskatoon

Title of Project: Microwave Remote Sensing of Snow Water Equivalent

Years commenced/completion: -

Thesis level(s)/graduate student names(s): not applicable

Major publication(s) directly related to project, within survey interval:

Title: Perla, R. and Banner, J., 1988. Calibration of capacitive cells for measuring water in snow.

Source: Cold Regions Science and Technology, 15(3), 225-231

Title:

Source:

Comments:(Abstract/aims/progress, etc.): The objective is to determine the interaction of microwaves with hydrological systems consisting of snow, soil and vegetative components: i.e. to complement statistical correlations with physical parameters and devise statistical/physical models with reduced variance.

DISCIPLINE (see coding instructions): Remote Sensing

Names(s) of Principal and Associate

Researcher(s): A. Wankiewicz

Institution/Department: National Hydrology Research Institute, Saskatoon

Title of Project: Multi-Satellite Monitoring of Hydrological Processes

Years commenced/completion: -

Thesis level(s)/graduate student names(s): not applicable

Major publication(s) directly related to project,

within survey interval:

Title: Wankiewicz, A., 1988. GEWEX - Global Energy and Water Cycle Experiment.

Source: Evaporation and Evapotranspiration Processes, F.J. Eley (Ed.) Canadian Climate Centre Report No.88-2, Saskatoon, 94-95

Title:

Source:

Comments:(Abstract/aims/progress, etc.): The objective is to develop a satellite basin-moisture monitoring system using target vetness indices derived from archived microwave and shortwave observations of Prairie watersheds.

DISCIPLINE (see coding instructions): Remote Sensing

Names(s) of Principal and Associate

Researcher(s): A. Wankiewicz

G. Kite (HRD/CCC/AES, Saskatoon)

R. Leith (P&Y Region, Environment Canada)

Institution/Department: National Hydrology Research Institute, Saskatoon

Title of Project: Satellite Run-off Forecasting

Years commenced/completion: -

Thesis level(s)/graduate student names(s): not applicable

Major publication(s) directly related to project,

within survey interval:

Title:

Source:

Title:

Source:

Comments:(Abstract/aims/progress, etc.): The objective is to develop satellite run-off-prediction procedures using watershed snowpack and antecedent moisture derived from archived microwave observations of Canadian watersheds.

DISCIPLINE (see coding instructions): Remote Sensing

Names(s) of Principal and Associate

Researcher(s): T.D. Prowse, P. Marsh, R. Perla and A. Wankiewicz (NHRI)

B. Goodison (Canadian Climate Climate Centre, AES)

J. Foster (Goddard Space Flight Centre, NASA)

J. Jasper (DIAND, Yellowknife)

Institution/Department: National Hydrology Research Institute, Saskatoon

Title of Project: Microwave Sensing of Snow over Tundra Environments

Years commenced/completion: -

Thesis level(s)/graduate student names(s): not applicable

Major publication(s) directly related to project,

within survey interval:

Title:

Source:

Title:

Source:

Comments:(Abstract/aims/progress, etc.): The objectives are to evaluate the usefulness of passive satellite microwave imagery for the measurement of snow-cover conditions in northern tundra environments and to develop suitable algorithms for relating imagery and snow-cover information.

DISCIPLINE (see coding instructions): Sedimentology

Names(s) of Principal and Associate

Researcher(s): M.S. Evans

E. Stoermer (University of Michigan)

Institution/Department: National Hydrology Research Institute, Saskatoon

Title of Project: Feasibility Study: Paleolimnology/Paleoclimatology

Years commenced/completion: -

Thesis level(s)/graduate student names(s): not applicable

Major publication(s) directly related to project,

within survey interval:

Title:

Source:

Title:

Source:

Comments: (Abstract/aims/progress, etc.): The objective is to determine whether phytoplankton and zooplankton microfossils are well-preserved in sediment cores collected from a lake in the semi-arid and in the humid regions of Saskatchewan. If so, to support a paleoclimatology/paleolimnology study of two or three lakes in Saskatchewan.

DISCIPLINE (see coding instructions): Sedimentology

Names(s) of Principal and Associate

Researcher(s): B.C. Kenney

Institution/Department: National Hydrology Research Institute, Saskatoon

Title of Project: Suspended Sediment Transport

Years commenced/completion: -

Thesis level(s)/graduate student names(s): not applicable

Major publication(s) directly related to project,

within survey interval:

Title:

Source:

Title:

Source:

Comments:(Abstract/aims/progress, etc.): The objective is to develop a cost-effective method for sampling suspended sediments in rivers.